

b) Amendments to the Claims

Claim 1 (Cancelled)

2. (Currently Amended) An isolated ~~A polypeptide selected from the group consisting of:~~

(a) a polypeptide consisting of the amino acid sequence represented by SEQ ID NO: 1;

~~———— (b) a polypeptide containing the amino acid sequence of 31 to 310 in the amino acid sequence represented by SEQ ID NO: 1, and~~

~~———— (c) a polypeptide consisting of an amino acid sequence where in the amino acid sequence of the polypeptide (a) or (b), one or more amino acids have been deleted, replaced or added and having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure.~~

3. (Currently Amended) A polypeptide according to claim ~~1~~ or 2 50 wherein the β 1,3-galactosyltransferase activity is the activity of transferring galactose via β 1,3-linkage to N-acetylglucosamine residue present at the non-reducing terminus of a sugar chain.

4. (Currently Amended) A polypeptide according to claim ~~1~~ or 2 50 wherein the β 1,3-galactosyltransferase activity is the activity of transferring galactose via β 1,3-

linkage to N-acetylglucosamine monosaccharide or to N-acetylglucosamine residue present at the non-reducing terminus of GlcNAc β 1-3Gal β 1-4Glc ~~or to N-acetylglucosamine monosaccharide~~.

5. (Currently Amended) A An isolated DNA selected from the group consisting of:

(a) DNA coding for the polypeptide described in claims ~~1~~ or 2, 48
or 49,

(b) DNA ~~having~~ comprising the nucleotide sequence of 402 to 1331 in the nucleotide sequence represented by SEQ ID NO: 2, and

(c) DNA ~~having~~ comprising the nucleotide sequence of 492 to 1331 in the nucleotide sequence represented by SEQ ID NO: 2, and

~~_____ (d) DNA hybridizing under stringent conditions with the DNA described in any of (a) to (c) and coding for a polypeptide having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure.~~

6. (Original) A recombinant DNA prepared by integrating the DNA described in claim 5 into a vector.

7. (Original) A recombinant DNA according to claim 6 which is plasmid pAMo-3GT5 or plasmid pBS-3GT5 (FERM BP-6645).

8. (Currently Amended) A transformant harboring the DNA described in claim 5, ~~the recombinant DNA in claim 6 or the recombinant DNA in claim 7.~~

9. (Currently Amended) A transformant according to claim 8 ~~which is a member~~ wherein the host is selected from the group consisting of a microorganism, an animal cell, a plant cell, an insect cell, a non-human transgenic animal and a transgenic plant.

10. (Currently Amended) A transformant according to claim 9 wherein the ~~microorganism~~ host is a microorganism belonging to the genus *Escherichia*.

11. (Currently Amended) A transformant according to claim 9 wherein the host is an animal cell ~~is a member~~ selected from the group consisting of a mouse myeloma cell, a rat myeloma cell, a mouse hybridoma cell, a CHO cell, a BHK cell, an African green monkey kidney cell, a Namalwa cell, a Namalwa KJM-1 cell, a human embryonic kidney cell and a human leukemia cell.

12. (Currently Amended) A transformant according to claim 9 wherein the host is an insect cell ~~is a member~~ selected from the group consisting of a *Spodoptera frugiperda* ovarian cell, a *Trichoplusia ni* ovarian cell and a silkworm ovarian cell.

13. (Currently Amended) A process for producing ~~the~~ a polypeptide ~~described in claims 1 or 2~~, which comprises culturing a transformant harboring a recombinant DNA prepared by integrating DNA coding for the polypeptide of any one of claims ~~1 to 4~~ 2, 48 or 49 into a vector in a medium to thereby form and accumulate said polypeptide in ~~the~~ culture, and collecting said polypeptide from said culture.

14. (Withdrawn and Currently Amended) A process for producing ~~the~~ a polypeptide ~~described in claims 1 or 2~~, which comprises breeding a non-human transgenic animal harboring a recombinant DNA prepared by integrating DNA coding for the polypeptide of any one of claims ~~1 to 4~~ 2, 48 or 49 into a vector to thereby form and accumulate said polypeptide in said animal, and collecting said polypeptide from said animal.

15. (Withdrawn) A process according to claim 14 wherein formation and accumulation occur in animal milk.

16. (Withdrawn and Currently Amended) A process for producing ~~the~~ a polypeptide ~~described in claims 1 or 2~~, which comprises culturing a transgenic plant harboring a recombinant DNA prepared by integrating DNA coding for the polypeptide of any one of claims ~~1 to 4~~ 2, 48 or 49 into a vector to thereby form and accumulate said polypeptide in said plant, and collecting said polypeptide from said plant.

17. (Withdrawn and Currently Amended) A process for producing the polypeptide ~~described in claims 1 or 2~~, which comprises synthesizing the polypeptide of any one of claims ~~1 to 4~~ 2, 48 or 49 in an *in vitro* transcription-translation system using DNA coding for said polypeptide.

18. (Withdrawn and Currently Amended) A process for producing a reaction product having galactose, which comprises ~~using a polypeptide having β 1,3-galactosyltransferase activity involved in the synthesis of sialyl-Lewis a sugar chain, present in colon cancer cells expressing sialyl-Lewis a sugar chain, or a polypeptide which is selected from the group consisting of:~~

~~(a) a polypeptide consisting of the amino acid sequence represented by SEQ ID NO: 1,~~

~~(b) a polypeptide containing the amino acid sequence of 31 to 310 in the amino acid sequence represented by SEQ ID NO: 1, and~~

~~(c) a polypeptide consisting of an amino acid sequence where in the amino acid sequence of the polypeptide (a) or (b), one or more amino acids have been deleted, replaced or added and having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure selecting a polypeptide according to any one of claims 2, 48 or 49 as an enzyme source, and allowing source;~~

providing (a) said enzyme source, (b) an acceptor substrate selected from the group consisting of: i) N-acetylglucosamine (GlcNAc), ii) an oligosaccharide having N-acetylglucosamine residue at the non-reducing terminus thereof, and iii) a

complex carbohydrate having N-acetylglucosamine residue at the non-reducing terminus thereof, and (c) uridine-5'-diphosphate galactose ~~to be present~~ in an aqueous medium to thereby form and accumulate said reaction product in the aqueous medium, ~~and collecting said reaction product from said aqueous medium~~, wherein the galactose is transferred via β 1,3-linkage to N-acetylglucosamine or N-acetylglucosamine residue of said acceptor substrate; and

collecting said reaction product from said aqueous medium.

19. (Withdrawn and Currently Amended) A process for producing a reaction product having galactose, which comprises ~~using a polypeptide having β 1,3-galactosyltransferase activity involved in the synthesis of sialyl-Lewis a sugar chain, present in colon cancer cells expressing sialyl-Lewis a sugar chain, or a polypeptide which is selected from the group consisting of:~~

(a) ~~a polypeptide consisting of the amino acid sequence represented by SEQ ID NO: 1,~~

(b) ~~a polypeptide containing the amino acid sequence of 31 to 310 in the amino acid sequence represented by SEQ ID NO: 1, and~~

(c) ~~a polypeptide consisting of an amino acid sequence where in the amino acid sequence of the polypeptide (a) or (b), one or more amino acids have been deleted, replaced or added and having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure~~ selecting a polypeptide according to any of claims 2, 48 or 49 as an enzyme source, and allowing source;

providing (a) said enzyme source, (b) an acceptor substrate selected from the group consisting of: i) glucose, ii) an oligosaccharide having glucose residue at the non-reducing terminus thereof, and iii) a complex carbohydrate having glucose residue at the non-reducing terminus thereof, and (c) uridine-5'-diphosphate galactose ~~to be present~~ in an aqueous medium to thereby form and accumulate said reaction product in the aqueous medium, ~~and collecting said reaction product from said aqueous medium~~; wherein the galactose is transferred via β 1,3-linkage to glucose or glucose residue of said acceptor substrate; and

collecting said reaction product from said aqueous medium.

20. (Withdrawn and Currently Amended) A process for producing a sugar chain or a complex carbohydrate, which comprises culturing ~~the~~ a transformant ~~selected from the group consisting of transformants of claim 9 derived from a microorganism, an animal cell, a plant cell and an insect cell~~ in a medium to thereby form and accumulate a sugar chain having galactose transferred via β 1,3-linkage to N-acetylglucosamine, N-acetylglucosamine residue, glucose or glucose residue thereof or a complex carbohydrate containing said sugar chain in the culture, and collecting said sugar chain or said complex carbohydrate from said culture.

21. (Withdrawn) A process for producing a sugar chain or a complex carbohydrate, which comprises breeding the non-human transgenic animal of claim 9 to thereby form and accumulate in said animal a sugar chain having galactose transferred via

β 1,3-linkage to N-acetylglucosamine, N-acetylglucosamine residue, glucose or glucose residue thereof or a complex carbohydrate containing said sugar chain, and collecting said sugar chain or said complex carbohydrate from said animal.

22. (Withdrawn) A process for producing a sugar chain or a complex carbohydrate, which comprises culturing the transgenic plant of claim 9 to thereby form and accumulate in said plant a sugar chain having galactose transferred via β 1,3-linkage to N-acetylglucosamine, N-acetylglucosamine residue, glucose or glucose residue thereof or a complex carbohydrate containing said sugar chain, and collecting said sugar chain or said complex carbohydrate from said plant.

23. (Withdrawn and Currently Amended) A process according to ~~claims 18 to 20~~ claim 18 wherein the complex carbohydrate is a complex carbohydrate selected from the group consisting of a glycoprotein, a glycolipid, a proteoglycan, a glycopeptide, a lipopolysaccharide, a peptidoglycan and a glycoside which is a steroid compound with a sugar chain.

24. (Withdrawn) A process according to claim 21 wherein formation and accumulation occur in animal milk.

25. (Withdrawn and Currently Amended) A method for determining the expression level of a gene encoding ~~the a~~ polypeptide of ~~claims 1 or 2~~, which comprises

hybridization using DNA coding for said polypeptide or a fragment of said DNA according to claim 5.

Claims 26-28 (Cancelled)

29. (Withdrawn and Currently Amended) A method for determining the expression level of a gene encoding a polypeptide having β 1,3-galactosyltransferase activity involved in the synthesis of sialyl-Lewis a sugar chain, present in colon cancer cells expressing sialyl-Lewis a sugar chain, or a polypeptide which is selected from the group consisting of:

(a) a polypeptide consisting of the amino acid sequence represented by SEQ ID NO: 1,

(b) a polypeptide containing the amino acid sequence of 31 to 310 in the amino acid sequence represented by SEQ ID NO: 1, and

(c) a polypeptide consisting of an amino acid sequence where in the amino acid sequence of the polypeptide (a) or (b), one or more amino acids have been deleted, replaced or added and having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure DNA according to claim 5, which comprises conducting polymerase chain reaction using the DNA of claim 26 an oligonucleotide comprising a consecutive 5 to 60 nucleotide sequence of said DNA or DNA complementary thereto.

30. (Withdrawn and Currently Amended) A method for detecting cancers ~~and or~~ cancer metastasis, which comprises ~~using~~ conducting the method of claim 29 and correlating the expression level to that obtained with cancer or cancer metastasis.

31. (Withdrawn and Currently Amended) A method for inhibiting transcription of DNA ~~coding a polypeptide having β 1,3- galactosyltransferase activity involved in the synthesis of sialyl-Lewis a sugar chain, present in colon cancer cells expressing sialyl-Lewis a sugar chain, or a polypeptide which is selected from the group consisting of:~~

~~(a) a polypeptide consisting of the amino acid sequence represented by SEQ ID NO: 1,~~

~~(b) a polypeptide containing the amino acid sequence of 31 to 310 in the amino acid sequence represented by SEQ ID NO: 1, and~~

~~(c) a polypeptide consisting of an amino acid sequence where in the amino acid sequence of the polypeptide (a) or (b), one or more amino acids have been deleted, replaced or added and having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure according to claim 5 or translation of its corresponding mRNA, which comprises blocking expression or translation using a DNA of claim 26 and or a DNA having an oligonucleotide comprising a consecutive 5 to 60 a nucleotide sequence represented by SEQ ID NO: 2 or 3 of said DNA or DNA complementary thereto.~~

Claim 32. (Cancelled)

33. (Withdrawn and Currently Amended) A method for immunological detection of a polypeptide according to claims 2, 48 or 49 ~~having β 1,3-~~ galactosyltransferase activity involved in the synthesis of sialyl-Lewis a sugar chain, present in colon cancer cells expressing sialyl-Lewis a sugar chain, or a polypeptide which is selected from the group consisting of:

(a) ~~a polypeptide consisting of the amino acid sequence represented by SEQ ID NO: 1,~~

(b) ~~a polypeptide containing the amino acid sequence of 31 to 310 in the amino acid sequence represented by SEQ ID NO: 1, and~~

(c) ~~a polypeptide consisting of an amino acid sequence where in the amino acid sequence of the polypeptide (a) or (b), one or more amino acids have been deleted, replaced or added and having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure, which comprises using the applying an antibody of claim 32 thereto and detecting antigen-antibody reaction for detecting said polypeptide.~~

Claims 34-37 (Cancelled)

38. (Withdrawn) A method for screening a compound ~~varying the~~ expression of a gene coding for the polypeptide of claims 1 or 2, which comprises contacting cells a transformant according to claim 9 which expresses said isolated DNA

~~expressing said polypeptide with a test sample and determining the content of sialyl-Lewis a sugar chain, Lewis a sugar chain, Lewis b sugar chain or sialyl-Lewis c sugar chain by use of anti-sialyl-Lewis a antibody, anti-Lewis a antibody, anti-Lewis b antibody or anti-sialyl-Lewis c antibody~~ amount of protein expressed.

Claims 39-47 (Cancelled)

48. (New) An isolated polypeptide comprising the sequence of amino acids 31 to 310 in the amino acid sequence represented by SEQ ID NO:1.

49. (New) An isolated polypeptide comprising the amino acid sequence represented by SEQ ID NO:1.

50. (New) An isolated modified polypeptide having an amino acid sequence where, in the amino acid sequence of the polypeptide of any one of claims 2, 48 or 49, from one to twenty amino acids have been deleted, replaced or added, and where said modified polypeptide has β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure.

51. (New) An isolated DNA that hybridizes under stringent conducting with the DNA of claim 5 and codes for a polypeptide having β 1,3-galactosyltransferase activity capable of synthesizing Gal β 1-3GlcNAc structure.

52. (New) The DNA of claim 51, wherein the stringent conditions comprise hybridizing the DNA at 65°C in the presence of 0.7 to 1.0 mol/L NaCl using the filter on which a DNA prepared from colonies or plaques is immobilized and then washing the filter at 65° using 0.1 to 2-fold concentration of saline-sodium citrate solution.

53. (New) A process according to claim 19 wherein the complex carbohydrate is a complex carbohydrate selected from the group consisting of a glycoprotein, a glycolipid, a proteoglycan, a glycopeptide, a lipopolysaccharide, a peptidoglycan and a glycoside which is a steroid compound with a sugar chain.

54. (New) A process according to claim 20 wherein the complex carbohydrate is a complex carbohydrate selected from the group consisting of a glycoprotein, a glycolipid, a proteoglycan, a glycopeptide, a lipopolysaccharide, a peptidoglycan and a glycoside which is a steroid compound with a sugar chain.